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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,629	09/16/2003	Kazuyoshi Honda	10873.1295US01	1898

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EXAMINER

LAM, CATHY FONG FONG

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,629

Applicant(s)

HONDA ET AL.

Examiner

Cathy Lam

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 16-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 7 and 10-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date Nov. 6, 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-15, drawn to a ceramic layered product, classified in class 361, subclass 301.1.
 - II. Claims 16-23, drawn to a method of making a ceramic layered product, classified in class 156, subclass 89.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by a different process such as by stacking the green sheets and conductive layers together alternately then fire the structure. The process as claimed can be used to make a different product such as a dielectric material with a metallic reinforcing material, that is used as a circuit substrate.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Atty: Douglas Mueller on June 21, 2004 a provisional election was made with traverse to prosecute the invention of group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office

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action. Claims 16-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102/103

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3 and 8 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nakamura et al (US 6606238).

Nakamura discloses a monolithic capacitor comprised of a plurality of ceramic layers (3) and internal electrodes (4,5).

The internal electrodes are formed onto the surface of the ceramic layers (3) in an alternate arrangement.

The ceramic layers (3) are made with BaTiO_3 ceramic material (col 4 L 35-38). The internal electrodes are made with a conductive paste which contains metallic powder such as nickel, silver, copper and their alloys (col 4 L 46-49). The metallic powder has an average grain size of $0.4\ \mu\text{m}$ (col 9 Table 1). The conductive paste is comprised of metallic powder and ceramic powder (or in this case the examiner takes this as an additive component). The ceramic powder has a grain size in the average smaller than the metallic powder (col 6 L 48-51).

In experiment 1, the conductive paste is comprised of 47.5 wt% Ni powder, 2.5 wt% of ceramic powder, 35 wt% of organic vehicle, 10 wt% of ethyl cellulose and 15 wt% of terpineol (col 8 L 25-34).

Nakamura does not explicitly states that the metallic powder is more than 50 atm% and the ceramic powder (or additive component) is less than 50 atm%. However the conductive paste in experiment 1 shows that the Ni powder is in a major amount compared to the ceramic powder. The examiner takes the position that the conductive paste which containing the organic solvent, binder and vehicle, etc. would be evaporated or dried out during the process of sintering or firing. Thus, leaving the conductive paste with mainly Ni powder and a minor amount of ceramic powder, thus becomes the internal electrode.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Pechini (US 3909327).

Pechini teaches a monolithic ceramic capacitor comprised a plurality of green ceramic sheets and a plurality of electrodes. The ceramic sheets and the electrodes are stacked together in an alternate arrangement.

The ceramic sheets are made with material such as barium titanate, and the electrodes are made with a mixture of 50-80 wt% metal particles and 20-50 wt% of ceramic particles (col 1 L 51-56). The metallic particles in this case are palladium and silver (col 1 L 63-64). The metallic particles and the ceramic powders are formed into a paste form which is then printed onto the green ceramic sheets (col 2 L 38-40).

When the stack of green ceramic sheets with printed conductive (or electrode) paste were sent to the furnace for firing, the metal particles melt and flow into the interstices of the green barium titanate sheets (col 2 L 64-68).

The electrode paste contains 20-50 wt% of barium titanate to prevent cracking which leads to a discontinuous internal electrode (col 3 L 31-37).

Claim Rejections - 35 USC § 103

11. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6606238) or Pechini (US 3909327).

Both Nakamura and Pechini teach a monolithic ceramic capacitor comprised of a plurality of ceramic green sheets and a plurality of internal electrodes. The ceramic green sheets and internal electrodes are stacked in alternating fashion.

Both the prior art teach the ceramic green sheets are made with barium titanate and the internal electrodes are made with metallic powders such as Ni, Cu, Ag, Pd, etc. The prior art also teach the electrode is made from a conductive paste that is comprised of the metallic powders and a small amount of additive.

The prior art however do not explicitly state the additive component increases near the surfaces of the metal layers (or internal electrodes), nor do they mention the thickness of the electrode being from 0.1 μm to 2 μm . The prior art are also silent about a packing factor of the metal layers.

In view of the prior art teachings, it would have been obvious that the content of the additive component increases on the surface of the metal layer (or internal electrodes) because during firing of the stacked structure materials would undergo diffusion at the interface. Furthermore, in terms of the thickness of the electrode and the packing factor, the examiner takes the position that these are obvious modification of the prior art because one would have to choose a thickness and density of the electrode for his design scheme.

Allowable Subject Matter

12. Claims 7 and 10-15 are objected to as being dependent upon a rejected base claim, but would be allowable if incorporate into independent claim(s).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Cathy Lam
Primary Examiner
Art Unit 1775

cfl
June 23, 2004